**AP Biology Assignments Oct 9 – Oct 16**

Watch the following videos and complete the video questions for the first two videos. The links are on the wiki and on our Google Classroom site.

1. What Darwin Never Knew (PBS): <https://www.youtube.com/watch?v=NOHzY1fuOz4>
2. Origins: How Life Began with Neil Tyson DeGrasse (PBS): http://video.pbs.org/video/1978170520/
3. Origin of Life Episode One with David Attenborough (BBC): https://www.youtube.com/watch?v=xR-yMiyquG4

**Video: What Darwin Never Knew**

Instructions: Go to the following website, watch the movie, and answer the questions that follow. The questions follow the movie in order.

http://www.pbs.org/wgbh/nova/evolution/darwin-never-knew.html

1. List three things that Darwin never knew. (from the intro and throughout)

2. What did Darwin discover in Argentina?

3. Describe two of the animals of the Galapagos Islands and what is unusual about them.

4. What evidence did Darwin have that species change?

5. What did Darwin hypothesize about the origins of life from his study of embryos? (You can use an example here)

6. How was Darwin’s view of nature different from the standard view of nature from Victorian times? How did this tie into his idea of natural selection?

7. Why do the finches’ beak shapes differ?

8. Use an example to explain what variation means.

9. Explain how camouflage coloration arose in the Rock pocket mouse.

10. Why is it said that mutations are neither good nor bad?

11. How many genes are in the human genome? How does this compare to other organisms?

12. Why do some fruit flies have wing spots and others do not, given that both kinds have the exact same sequence of DNA in their “paintbrush” gene?

13. How do we know that whales and manatees evolved from 4-legged land creatures that “lost” their legs and move “back” to the sea?

14. How do finches end up with different beak shapes when they all have the same DNA sequence in their beak genes?

15. Why was the discovery of the fossil *Tiktaalik* significant for the study of evolution? Also, describe the features that made this organism significant.

16. What do *Hox* (homeotic) genes do? How do they explain how a fish obtained legs?

17. What do “switches” do?

18. What makes human hands unique?

19. Humans have a jaw muscle mutation that apes do not have. How has the jaw muscle mutation been an evolutionary advantage for humans?

20. When researchers compared the gene that control brain size development between humans and chimps, what did they discover?

**“NOVA - Origins: How Life Began” Worksheet**

**Directions:**

Answer the following questions while watching this video. These questions go in chronological order to the video. Some answer to questions will be very close to each other in the video and some will be further away.

**Spontaneous Generation**

1. Describe the ancient recipe for creating life:
2. Why did scientists at the time believe this created life?

**Ancient Earth**

1. Describe differences between Earth of today, and ancient Earth:
   1. The sun:
   2. The atmosphere:
   3. Color:
2. What was the heavy bombardment?

**Cueva de Villa Luz (Cave of the Lighted House)**

1. What is the gas present in this cave that is poisonous to us?
2. What does this gas smell like?
3. What is formed when hydrogen sulfide gas reacts with water?
4. Describe what “snottites” are made of:
5. What about this environment makes it so harsh and extreme?

**Chemistry and Life**

1. What are the four elements that make up life?
2. Which one of those four elements is the single most important?
3. Why is this element so unusual and unique?
4. What were the three parts of the experiment that Stanley Miller setup to imitate ancient Earth?
   1. What was produced as a result of this experiment?
   2. These molecules are a building block of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Geology and Life**

1. If the ancient rocks in Greenland are too old to contain fossils, how are they tested to see if life existed at that time?

**Organic Molecules and Outer Space**

1. Describe how the moon formed:
2. What would have happened if the building blocks of life existed during this collision?
3. What was found in the space dust collected in the outer atmosphere?
4. What molecule was found in the meteorite that hit Australia?
5. What happened to the amino acids in the simulated collision experiment?
6. What can peptides make?

**Underground**

1. If there is no sunlight underground, what are the bacteria using as a source of energy?
2. Could life have survived deep below the surface of ancient Earth?

**The Ocean**

1. What was found living near the volcanic vents?
2. Could life have survived near the ocean floor in ancient Earth?

**Photosynthesis**

1. Once the bombardment was over, what were bacteria able to use as a source of energy?
2. What are stromatolites?
3. What are cyanobacteria?
4. What was the waste gas produced by this bacteria?
5. What happened to this waste gas after it was absorbed by the oceans?
6. How did the composition of the atmosphere change as these bacteria grew?
7. If all of Earth’s history was compressed into 24 hours, how long have humans been around?
8. Why were bacteria and oxygen so important to the development of the rest of the life on Earth?